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3 wherein the second threshold value represents a number of
4 unprocessed data packets.

1 19. A data packet processing device comprising:
2 a source of data packets;
3 a destination of data packets; and
4 a data packet processing engine, configured to determine
5 an actual arrival rate of data packets and a number of data
6 packets stored in a queue and initiate transmission of data
7 packets in the queue based on the actual arrival rate and the
8 number of data packets in the queue.

1 20. The device of claim 19 wherein the processing engine is
2 configured to transmit the data packets in the queue includes
3 transmitting at least one burst of data packets, where each
4 burst contains a number of data packets sufficient to maximize
5 throughput.

1 21. The device of claim 19 further including storing a data
2 packet in the queue if the actual arrival rate is less than
3 the first threshold value, and scheduling a future interrupt
4 event to cause processing of data packets from the queue.

1 22. The device of claim 19 further including comparing the
2 actual arrival rate of data packets to a first threshold,
3 wherein the actual arrival rate is based on a weighted average
4 of time intervals between a predetermined number of previous
5 data packets, and wherein the first threshold value
6 corresponds to a predetermined arrival rate.

1 23. The device of claim 22 further including transmitting a
2 data packet without storing the data packet in the queue, if
3 the actual arrival rate is greater then the first threshold
4 value.

1 24. The device of claim 19 further including comparing the
2 number of data packets to a second threshold, wherein the
3 second threshold value represents a number of unprocessed data
4 packets.

1 25. A computer network system comprising:

2 an input device for receiving data packets from the
3 network;

4 an output device for transmitting data packets to the
5 network;

6 wherein each device includes a data packet processing
7 engine configured to determine an actual arrival rate of data
8 packets and a number of data packets stored in a queue and
9 initiate transmission of data packets in the queue based on
10 the actual arrival rate and the number of data packets in the
11 queue.

1 26. The system of claim 25 wherein transmitting the data
2 packets in the queue includes transmitting at least one burst
3 of data packets, where each burst contains a plurality of data
4 packets sufficient to maximize throughput.

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1 27. The system of claim 25 further including storing a data
2 packet in the queue if the actual arrival rate is less than
3 the first threshold value, and scheduling a future interrupt
4 event, wherein the occurrence of the future interrupt event
5 causes processing of data packets from the queue.

1 28. The system of claim 25 further including comparing the
2 actual arrival rate of data packets to a first threshold,
3 wherein the actual arrival rate is based on a weighted average
4 of time intervals between a predetermined number of previous
5 data packets, and wherein the first threshold value
6 corresponds to a predetermined arrival rate

1 29. The system of claim 28 further including transmitting a
2 data packet without storing the data packet in the queue, if
3 the actual arrival rate is greater than the first threshold
4 value.

1 30. The system of claim 25 further including comparing the
2 number of data packets to a second threshold, wherein the
3 second threshold value represents a number of unprocessed data
4 packets.